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# SIGMA XI QUARTERLY

Vol. IV

MARCH, 1916

No. 1



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## OFFICERS OF SIGMA XI

President.....	CHARLES S. HOWE
	Case School of Applied Science, Cleveland, Ohio
Secretary.....	HENRY B. WARD
	University of Illinois, Urbana, Illinois
Treasurer.....	JAMES F. KEMP
	Columbia University, New York City

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### EXECUTIVE COMMITTEE

JULIUS STIEGLITZ.....	University of Chicago, Chicago, Ill.
	<i>Term expires January, 1917</i>
DEXTER S. KIMBALL.....	Cornell University, Ithaca, N. Y.
	<i>Term expires January, 1918</i>
EDWARD ORTON, JR. ....	Ohio State University, Columbus, Ohio
	<i>Term expires January, 1919</i>
CLARENCE E. MCCLUNG.....	University of Pennsylvania, Philadelphia, Pa.
	<i>Term expires January, 1920</i>
F. E. KESTER.....	University of Kansas, Lawrence, Kansas
	<i>Term expires January, 1921</i>

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# SIGMA XI QUARTERLY

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## EDITORIAL COMMITTEE

Edward Orton, Junior  
Floyd Karker Richtmyer

Henry Baldwin Ward  
Samuel Wendell Williston

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Volume IV

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Number 1

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## THE COLUMBUS CONVENTION

The records of the Columbus Convention which occupy the major part of this number of the *QUARTERLY*, give a correct account of the business transacted, but no such report can really show the spirit of the occasion. The business session was attended by a larger number of non-delegates than usual, and yet, the total was small in comparison with the membership of the Society. Among the residents of Columbus, and the thousand or more in attendance at the scientific meetings being held at the time, there were doubtless many who are members of Sigma Xi. Even if a good part of them were prevented from participating by other engagements, one must still acknowledge that the actual attendance fell far below the possible figure. This discrepancy is due, apparently, to lack of interest, or to ignorance of the fact that conventions are open to all members, even though voting is limited to accredited delegates. It would be a powerful influence, in arousing greater interest in the Society, and in diffusing knowledge of its aims and the results being achieved, if the attendance could be very largely increased.

There was no lack of interest among those present. The discussion was general, and led to a clearer understanding of weak points in the organization, as well as of greater opportunities opening before us. What a misfortune, that there were not ten times as many present, to aid in spreading abroad the results of these discussions. The enthusiasm shown in the meeting, would have been of great service to some members, and would have helped answer the question that comes up every now and then—is Sigma Xi really doing anything worth while? If you did not attend the Columbus Convention, make a note now that you lost something good and plan to come next time.

It was unfortunate also that the chapter representation was not larger. Because the Constitution has been amended so as to make a quorum consist of those duly accredited delegates who are present, it is possible to transact the necessary business, even if some delegates are forgetful and do not turn up, or if some chapters are indifferent and make no provision to be represented. The work of the Society is going on splendidly. The delegates who were at the convention brought reports of active and successful work in their chapters. They were eager to spread more widely the influence of a movement which they had found so valuable and they planned definitely to extend the usefulness of Sigma Xi to new fields. The chapters that were unrepresented lost an opportunity to gain information as well as inspiration and the mere review of the formal record of business transacted can not make good that loss. The Society would have gained something if there had been a larger representation of the chapters, but the chapters themselves would have been the greatest gainers.

The annual dinner was the largest which Sigma Xi has ever held, and would have been even larger if the capacity of the room had been greater. After tickets had been sold in excess of the normal seating capacity, the Ohio Union was reluctantly forced to refuse further appeals for places. In spite of the crowd the service was good, the dinner excellent, and everybody had a good time. The plan inaugurated by President Howe of bringing in a distinguished visitor as the principal speaker was an unlimited success, of course, with ex-President Charles W. Eliot as the speaker. What Doctor Eliot said on the significance of research made an especially strong appeal to the members, because it voiced the experience of one outside the membership of the Society, who had had unusual opportunities for measuring the influence in education of that for which Sigma Xi stands.

Members should examine the records of the Columbus Convention with a view to making recommendations to members of the executive committee for consideration at the annual meeting provided for in the new by-law. It is planned to hold this meeting if possible in the late spring or early summer so that a full report of its work may be laid before every active member of the Society in the September *QUARTERLY*. Individuals and chapters will then be

able to consider any proposals so fully that delegates to the general convention next winter can participate effectively in the discussions of the Convention and much more satisfactory progress can be made than is the case when new proposals have not had such preliminary consideration.

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The Alpha Chapter has published its yearbook for 1915-16 in the form of an attractive twenty-page pamphlet in stiff covers. By printing the first article of the Constitution and the pledge on the opening page, the aims and ideals of Sigma Xi are presented conspicuously to the reader. The programs for 1914-15 and 1915-16 which follow demonstrate in effective fashion the activity of the Chapter. The complete list of officers and committees introduces the chapter roll in which is found the name and address of each active member in good standing and of all resident alumni. The secretary has added at the end of the booklet a brief appeal to the membership that evidences his own devotion to the work and explains in good part the success of the chapter activities. The machine will work well when the wheels are set true and well oiled.

PROCEEDINGS  
OF THE  
SEVENTEENTH CONVENTION OF THE SOCIETY OF  
SIGMA XI

COLUMBUS, OHIO, DECEMBER 28, 1915

On December 28, 1915, the Seventeenth Convention was called to order at 4:10 P. M., in Page Hall on the Ohio State University campus, by President Charles S. Howe. He appointed as Committee on Credentials, J. F. Abbott, Chairman, of Washington University, St. Louis; R. B. Williams of the University of Iowa, Iowa City; E. P. Lewis of the University of California, Berkeley.

After receiving and inspecting credentials presented, the Committee reported the following list of delegates duly accredited to represent the chapter indicated:

Chapter	Délegates
California	E. P. Lewis
Case School	D. T. Wilson
Chicago	H. C. Cowles
Colorado	Francis Ramaley
Cornell	F. K. Richtmyer
District of Columbia	Charles Brooks
	H. Hasselbring
	Dr. L. O. Howard
Illinois	G. A. Miller
Iowa	G. F. Kay
	L. P. Sieg
	R. B. Wylie
Kansas	F. E. Kester
	U. G. Mitchell
Minnesota	H. A. Erikson
	C. O. Rosendahl
	E. C. Stakman
Missouri	A. E. Flowers
Nebraska	R. J. Pool
Northwestern	S. I. Kornhauser
Ohio	F. C. Caldwell
	Wm. McPherson
	H. Osborn

Chapter	Delegates
Purdue	H. E. Enders
	A. M. Kenyon
Stanford	V. L. Kellogg
Syracuse	U. W. Blackman
	Geo. T. Hargitt
	L. H. Pennington
Union	M. King
Washington University	J. F. Abbott

In addition to the delegates, the following persons were registered as present at the Convention.

Name	Chapter
Charles S. Howe	Case School
H. W. Kuhn	Ohio State University
Wm. R. Lazenby	Ohio State University
C. A. Ludwig	University of Michigan
Edward Orton, Jr.	Ohio State University
Geo. B. Pegram	Columbia University
Hortense Rickard	Ohio State University
D. A. Rothrock	University of Indiana
F. H. Safford	University of Pennsylvania
J. C. Shedd	Olivet College
A. Franklin Shull	University of Michigan
Henry B. Ward	University of Illinois

The records of the previous Convention as printed in the *QUARTERLY* for March, 1915, volume III, no 1, were on motion duly approved. The President, appointed as a Nominating Committee, to report at the close of the meeting, the following:

William McPherson, Chairman

L. O. Howard

F. K. Richtmyer

The treasurer's report was referred to the Executive Committee for audit and publication in the proceedings of the Convention.

The reports of Chapters were deferred, with the statement that they would be called for at the annual dinner announced for the evening.

A series of items was reported from the Executive Committee, as follows:

1. The amendment, offered by the Union Chapter, at the Philadelphia Convention and printed in the *QUARTERLY*, volume III,



page 8, was presented without recommendation. The amendment stands as follows:

Resolved that Article VII be amended by the insertion of the following words as Section 2, and that the present Section 2 and Section 3 become Section 3 and Section 4: "Section 2. At the annual convention of the Society preceding the one at which officers are to be elected, a Nominating Committee of five members shall be elected by a preliminary and final ballot of the chapters present. The Nominating Committee shall report to the Executive Committee, not later than ninety days preceding the date of the coming Convention, its proposed list of officers for ensuing year, and the Executive Committee shall send such list of officers to the several chapters not less than sixty days preceding the date of the coming Convention."

After discussion a motion to table the amendment was adopted.

2. The amendment offered at the Philadelphia Convention by the Kansas Chapter, printed in the *QUARTERLY*, volume III, page 8, was reported with the recommendation that it be not adopted. The amendment reads as follows:

Resolved that Article VIII, Section 5 of the Constitution be amended by the addition of the words: "provided said delegates represent not less than one-half of the active chapters."

A motion to adopt the amendment was lost.

3. The amendment to the Constitution, proposed by the Union Chapter and printed in the *QUARTERLY*, volume III, page 9, was reported with the recommendation that it be adopted. The amendment reads as follows:

Resolved that Article X, Section 1 of the Constitution be amended by the addition of the words: "or shall have been submitted by any chapter to the several chapters through the Executive Committee not less than ninety days prior to the date of the next coming convention."

On motion the amendment was adopted.

4. Certain amendments outlined to include means for providing for associate membership in those chapters which were desirous of trying such a plan, were presented by the Executive Committee to amend the Constitution in accordance with the following form:

### ARTICLE III

#### Membership

##### Section 1.

After the word active, insert the word, "associate."

(The present constitution which was amended at the last convention retained the terms Alumni and Honorary Members. As the convention last



year did not see fit to eliminate the Alumni and Honorary Members, it seems best to retain them now; that is to say, that whatever changes are made now should refer to Associate Members and Associate Membership only.)

Section 2 (a) Insert the word "Active" before the words, "Members of any chapter."

Section 6. Each chapter shall have the privilege of providing in its by-laws for the election of associate members.

Section 7. When a chapter elects to have associate members, the following and no other shall be eligible to associate membership in that chapter:

(a) Any graduate student who has shown marked excellence in two or more departments of pure or applied science.

(b) Any undergraduate student who has completed the required work of the first three years and who has shown marked excellence in two or more departments of pure or applied science.

Section 8. Associate members shall have all the privileges of the active members, except the right to vote, with such other restrictions only as may be specifically stated in the Constitution of the Society, or by-laws of the chapter.

Section 9. Associate members of any chapter who may become connected with another institution at which there is a chapter whose by-laws provided for associate membership shall be entitled to enroll as associate members in the latter on presenting satisfactory credentials, but associate members of any chapter who become connected with another institution at which there is a chapter whose by-laws do not provide for associate membership, shall not be entitled to any membership in the chapter, except through specific election by the chapter.

#### ARTICLE IV

##### Election of Members

Section 1. After the word members, insert the words, "and associate members" if the chapter allows them.

#### ARTICLE V

##### Initiation

Section 2. (c) After the word active, insert the words "or associate."

Section 4. After the words "duly elected to" insert the words "active (or associate)."

After discussion the amendments were referred to the next Convention for action.

It was on motion further decided that the Executive Committee be requested to consider proper insignia for associate members in case the preceding amendment should be adopted by the national convention and to propose such modifications of the Constitution as might be demanded in accordance with the plan for amending the Constitution just adopted so that these proposals might come up for consideration at the next convention and in connection with the amendment providing for associate membership.

5. The proposal of the Kansas Chapter made at the last convention that the Executive Committee be asked to consider for report a change in the number of undergraduates that might be elected to membership, was referred to the Convention with the statement that in the opinion of the Executive Committee, no change was wise at present.

No further action was taken on this matter.

6. The Executive Committee presented the following by-law, with the recommendation that it be adopted as a rule of the Society.

"On call of the President of Sigma Xi, the Executive Committee shall hold annually at least one stated meeting, independent of other organizations, and the expenses of those in attendance shall be paid from the national treasury of Sigma Xi."

On motion the by-law was adopted, a roll call of the Chapters showing an unanimous vote in its favor.

7. The Executive Committee reported that by majority vote, it was recommended to grant a charter to the University of Pittsburgh. This action had been duly reported to the various Chapters, and was now brought up for action by the Convention.

After extended discussion involving the general question as well as the special one, a motion to grant the Charter was laid on the table.

8. The Executive Committee recommended that the customary fifty-cent assessment be laid on each active member of the Society for the year of 1916. The recommendation was on motion, unanimously adopted.

Under the heading of new business, the Secretary read a communication from the Minnesota Chapter, presenting a proposed amendment to the Constitution, which was read as follows:

"Active members of any chapter who are in arrears for dues for two years or more may, after due notification, be dropped from active membership by vote of the chapter; and the names of members so dropped shall be published in the SIGMA XI QUARTERLY."

After reading and discussion, the amendment was referred to the next convention in accordance with the Constitution of the Society.

Mr. A. E. Flowers, from Missouri, moved that the Executive Committee take steps to interest alumni members in the QUARTERLY, and to keep them in touch with the activities and purposes of the Society.

After discussion, the motion was unanimously adopted.

The delegates of The District of Columbia Chapter, proposed an amendment to Article II, Section 2 (b) of the Constitution, reading as follows:

To "Amend Article II, Section 2 (b) by omitting all after the word 'chapters' in the second line of the paragraph; so as to make it read, '(3) Membership of alumni chapters shall be composed of alumni members of collegiate chapters.'"

After discussion, this amendment was referred to the next convention in accordance with the Constitution of the Society.

Mr. Shedd of Cornell, brought before the Convention the situation in southern California, where there are many scientific men and noteworthy scientific activities, and where there is evident need of the influences that might be exerted by a chapter of Sigma Xi. He pointed out at the same time that the various institutions in that territory had probably not yet reached the point at which it would be feasible in accordance with our policy to establish chapters in them. He inquired whether there was any way in which the influences of the Society might be extended to the scientific men in that territory. The President pointed out the value of an alumni chapter, and called attention to the success which had attended the establishment of the first alumni chapter in the District of Columbia. He indicated also, the effective influences which such an organization would exert by drawing together all scientific men of research proclivities, whether working in small institutions, in special organizations like laborator-

ies, observatories, or other research foundations, or carrying on their research work under private auspices. He expressed the hope, that we might look forward to the formation of such a chapter in the region indicated, where it could clearly exert a vigorous influence for the development of research work while at the same time, it would be a helpful stimulus to the members of the organizations who are drawn together for conference and discussion.

Professor Richtmyer of Cornell, spoke on the advisability of extending the influences of the Society to other countries, and the possibility of organizing chapters in universities outside the United States. Attention was called to the fact that the phraseology of the Constitution made it possible to consider applications for granting charters from any point where interest was manifested in the movement.

The question, was on motion, referred to the Executive Committee for consideration and such action as might seem fit.

The Report of the Nominating Committee was presented, showing that the only vacancy to be filled was the position of that member of the Executive Committee, whose term expired with January 1916. The committee recommended F. E. Kester of the University of Kansas, as a member of the Executive Committee, for the term to expire January 1921.

On motion, the report was adopted, and the Secretary requested to cast the ballot of the Convention for the nominee. The ballot was cast and the election completed in due form.

After certain announcements, the Convention adjourned.

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#### NOTE

The Minnesota and Wisconsin chapters of Sigma Xi have established for this year an exchange lectureship. President C. R. Van Hise of the University of Wisconsin addressed the Minnesota chapter in March on the Panama Canal. This lecture contained a more or less popular account of the work of the committee of scientists which recently investigated the slides at Panama. The other lecture will be given at Wisconsin in April by Dr. E. M. Freeman of the University of Wisconsin on the Red Scourge of Wheat.

W. J. MEEK, *Secretary.*

# ANNUAL REPORT OF THE GENERAL TREASURER OF THE SOCIETY OF SIGMA XI

FOR THE YEAR 1915

## RECEIPTS

January 1	Balance from 1914.....	\$248.45
January 26	Brown University Assessment of 1914.....	18.00
February 1	Worcester Polytechnic Assessment of 1914.....	17.00
February 4	Washington University, St. Louis.....	21.50
February 17	University of California.....	65.00
March 16	Columbia University.....	50.00
March 17	University of Indiana.....	17.50
April 19	Purdue University.....	25.50
May 11	Worcester Polytechnic Institute.....	30.00
May 13	Wisconsin University.....	78.00
May 19	Ohio State University.....	55.50
May 19	Case School of Applied Science.....	15.00
May 19	Colorado State University.....	18.50
May 24	Union College.....	10.50
May 24	Michigan University.....	68.00
May 25	Washington State University.....	24.00
May 27	Cornell University.....	93.00
May 27	Chicago University.....	91.50
June 1	Missouri State University.....	38.50
June 7	Kansas University.....	28.50
June 10	Northwestern University.....	27.00
June 11	Minnesota University.....	62.00
August 12	Syracuse University.....	21.50
August 27	Rensselaer Polytechnic Institute.....	17.50
October 22	Nebraska University Assessment for 1913 and 1914..	59.00
December 4	Indiana University Assessment for 1914.....	20.00
December 11	Pennsylvania University Assessment for 1914.....	66.00

Total Receipts.....\$1,286.95

1915

## EXPENSES

January 23	Secretary's Assistant .....	\$ 35.00
February 6	Expenses of Secretary of Council.....	4.63
February 25	Secretary's Assistant .....	35.00
March 24	Secretary's Assistant .....	35.00
April 19	The Dreka Company, Official Stationery.....	58.80
April 26	Secretary's Assistant .....	35.00
May 3	SIGMA XI QUARTERLY .....	192.88
May 11	Stenographer to Treasurer.....	1.50
May 24	Secretary's Assistant .....	35.00



## SIGMA XI QUARTERLY

May 28	Mailing Blanks .....	4.41
June 7	Engrossing Texas Chapter Charter.....	14.50
June 8	Secretary's Assistant .....	27.50
June 10	Assistance to Secretary .....	15.79
June 10	Rental of Secretary's typewriter.....	8.00
June 10	Notices of incorrect addresses .....	1.75
June 10	Printograph notices to Secretary .....	1.44
June 28	One thousand membership diplomas .....	27.81
July 29	SIGMA XI QUARTERLY .....	115.30
July	Secretary's Assistant .....	30.00
July	Three Hundred Report Blanks for Secretary.....	4.75
August	Secretary's Assistant, one-half month.....	15.00
August	Clerical help to Secretary.....	4.75
September 27	Secretary's Assistant .....	35.00
October 27	Secretary's Assistant .....	35.00
November 4	SIGMA XI QUARTERLY .....	114.94
December 1	Secretary's Assistant .....	35.00

Total Expenses .....\$ 923.75

Total Receipts .....\$1,286.95

Total Expenses ..... 923.75

Balance December 22 .....\$ 363.20

As auditor appointed by the President of the Society I have examined these accounts of the treasurer for the year 1915. I find them correct and the balance in agreement with the bank book.

GEORGE B. PEGRAM.

Later Note. The dues of the District of Columbia Alumni chapter for 1915, were received December 28, too late for insertion in the above. The dues of the University of California chapter for 1915 were received January 31, 1916.

March 1, 1916, the chapters in arrears are as follows:

For 1915—Rensselaer, Yale, Nebraska, Brown, Iowa, Stanford, California, Columbia, Illinois, Purdue, Washington University, St. Louis, District of Columbia, and the University of Texas.

It is important that the chapters should look upon an annual contribution of fifty cents per each active member as a part of the regular routine, to be collected and forwarded as soon as possible after the new calendar year opens, following the annual convention.

JAMES F. KEMP, *General Treasurer.*



## CONVENTION DINNER

The Annual Sigma Xi Dinner, was given in the Ohio Union at 6 o'clock. The roster of guests follows:

NAME	LOCATION
J. F. Abbott.....	Washington University (St. Louis)
Geo. D. Allen.....	University of Minnesota
E. R. Allen.....	Wooster, Ohio
Chas. O. Appleman.....	Chicago
E. H. Balz.....	Ohio State University
E. Eugene Barker.....	Ithaca, New York
S. J. Barnett.....	Ohio State University
F. L. Bishop.....	University of Pittsburgh
M. W. Blackman.....	Syracuse, New York
A. B. Bleile.....	Ohio State University
C. E. Boord.....	Ohio State University
J. A. Bownocker.....	Ohio State University
J. K. Breitenbecher.....	Western Reserve University
Reed O. Brigham.....	Toledo, Ohio
F. C. Brown.....	Iowa State University
Forest B. H. Brown.....	Ohio State University
S. L. Brown.....	University of Texas
F. C. Caldwell.....	Ohio State University
B. E. Carmichael.....	Wooster, Ohio
Charles J. Chamberlain.....	University of Chicago
E. H. Clapp.....	District of Columbia
J. F. Clevenger.....	University of Chicago
E. T. Coddington.....	Ohio State University
A. D. Cole.....	Ohio State University
Emily Downer Cole.....	Columbus, Ohio
E. R. Cummings.....	University of Indiana
H. L. Dodge.....	Iowa State University
Frederick Dunlap.....	University of Missouri
M. W. Eddy.....	Pennsylvania State College
Charles W. Eliot.....	Cambridge, Massachusetts
Grace H. Eliot.....	Cambridge, Massachusetts
Howard E. Enders.....	Purdue University
Henry A. Erikson.....	Minneapolis, Minnesota
Wm. Lloyd Evans.....	Ohio State University
C. H. Farr.....	Columbia University
A. E. Flowers.....	Ohio State University
F. A. Focke.....	
T. M. Focke.....	Case School
Arthur L. Foley.....	University of Indiana
J. A. Foord, (Alpha chapter).....	Massachusetts Agricultural College
W. F. M. Forbes.....	Cornell University

NAME	LOCATION
Hattie Letus Franklin.....	Bethlehem, Pennsylvania
W. S. Franklin.....	Columbia University
D. Kennedy Fraser.....	Cornell University
Thomas E. French.....	Ohio State University
Henry G. Gale.....	University of Chicago
T. W. Galloway.....	Decatur, Illinois
Eloise Gerry.....	University of Wisconsin
Thos. H. Haines.....	Columbus, Ohio
Lewis D. Hall.....	Department of Agriculture
J. C. Hambleton.....	Columbus, Ohio
Geo. T. Hargitt.....	Syracuse University
Mary T. Harman.....	Manhattan, Kansas
H. Hasselbring.....	District of Columbia
C. C. Hayden.....	Wooster, Ohio
A. F. Hemenway.....	University of Chicago
W. E. Henderson.....	Ohio State University
Cora B. Hennel.....	University of Indiana
B. B. Higgins.....	Georgia Experiment Station
Richard M. Holman.....	Ann Arbor, Michigan
Charles S. Howe.....	Case School
Harry Hower.....	Case School
Mason E. Hufford.....	University of Indiana
A. W. Hull.....	Schenectady, N. Y.
W. J. Humphreys.....	Washington, D. C.
Herbert E. Ives.....	Pennsylvania
L. R. Jones.....	University of Wisconsin
H. Judd.....	Ohio State University
Enoch Karrer.....	Washington University
G. F. Kay.....	Iowa State University
E. W. Kennard.....	University of Minnesota
A. M. Kenyon.....	Purdue University
F. E. Kester.....	University of Kansas
Morland King.....	Union College
Robert W. King.....	Cornell University
W. A. Knight.....	Ohio State University
Chas. T. Knipp.....	Urbana, Illinois
S. I. Kornhauser.....	Northwestern University
H. W. Kuhn.....	Ohio State University
E. L. Landacre.....	Ohio State University
E. P. Lewis.....	University of California
M. G. Lloyd.....	Chicago, Illinois
C. A. Ludwig.....	University of Michigan
Wm. T. Magruder.....	Ohio State University
E. B. Mains.....	Ann Arbor, Michigan
Thos. F. Manns.....	Delaware State College
F. W. Marquis.....	Ohio State University
Ruth Marshall.....	De Kalb, Illinois

# CONVENTION DINNER

15

NAME	LOCATION
Wm. J. McCaughey.....	Ohio State University
Louise S. McDowell.....	Wellesley College
Wm. McPherson.....	Ohio State University
Dayton C. Miller.....	Case School
Edith Easton Miller.....	Case School
G. A. Miller.....	Urbana, Illinois
Wm. C. Mills.....	Ohio State University
U. G. Mitchell.....	University of Kansas
G. S. Moler.....	Cornell University
Chas. B. Morrey.....	Ohio State University
Herbert W. Mumford.....	University of Illinois
Edward Orton, Jr.....	Columbus, Ohio
Herbert Osborn.....	Ohio State University
S. W. Parr.....	Urbana, Illinois
L. H. Pennington.....	Syracuse, New York
C. S. Plumb.....	Ohio State University
James B. Pollock.....	Ann Arbor, Michigan
R. A. Porter.....	Syracuse, New York
Alfred H. W. Povah.....	Ann Arbor, Michigan
I. G. Priest.....	Bureau of Standards, Washington
Bernard Raymund.....	Ohio State University
Edward Rice.....	Ohio Wesleyan University
A. Richards.....	University of Texas
Mrs. F. K. Richtmyer.....	Cornell University
F. K. Richtmyer.....	Cornell University
W. R. B. Robertson.....	University of Kansas
F. H. Safford.....	University of Pennsylvania
Mrs. F. H. Safford.....	University of Pennsylvania
Frank E. Sanborn.....	Ohio State University
John H. Schaffner.....	
Paul B. Sears.....	Ohio State University
W. L. Severinghaus.....	Columbia University
John C. Shedd.....	Olivet College
Geo. D. Shepardson.....	University of Minnesota
Annie W. Sabine Siebert.....	Columbus, Ohio
L. P. Sieg.....	State University of Iowa
Charles P. Sigerfoos.....	University of Minnesota
S. Sisson.....	Ohio State University
Letetia Snow.....	Wellesley College
G. W. Stewart.....	Iowa City, Iowa
O. M. Stewart.....	University of Missouri
R. E. Stone.....	Guelph, Ontario
J. Taubenhaus.....	Delaware College
A. Hoyt Taylor.....	University of Wisconsin
W. M. Tucker.....	Indiana University
F. M. Van Tuyl.....	University of Illinois
C. A. Waldo.....	Washington University

NAME	LOCATION
Henry B. Ward.....	University of Illinois
A. G. Webster.....	Clark University
Ada L. Weckel.....	Oak Park, Illinois
Geo. F. Weide.....	Gambier, Ohio
Albert P. Weiss.....	Ohio State University
C. N. Wenrich.....	Pittsburgh University
Frances G. Wick.....	Vassar College
D. T. Wilson.....	Case School
G. Winchester.....	W. & J. College
James R. Withrow.....	Ohio State University
Alvalyn E. Woodward.....	Vassar College
Robert B. Wylie.....	Iowa State University

Between courses, the President called for chapter reports which were presented by the following named persons:

Cornell—F. K. Richtmyer	Case—D. C. Miller
Union—Robert W. King	Indiana—Arthur L. Foley
Kansas—U. G. Mitchell	Missouri—O. M. Stewart
Minnesota—Henry A. Erikson	Northwestern—S. I. Kornhauser
Ohio State Union—H. Osborn	Syracuse—R. A. Porter
Iowa—Robert B. Wylie	Purdue—A. M. Kenyon
California—E. P. Lewis	Washington University, St. Louis
	—J. F. Abbott
Columbia—W. L. Severinghaus	District of Columbia—L. O. Howard
Chicago—Henry G. Gale	Texas—S. L. Brown
Illinois—G. A. Miller	

The following chapters did not respond when called upon and consequently no report was presented this time:

Rensselaer	Michigan
Yale	Wisconsin
Nebraska	University of Washington
Pennsylvania	Worcester
Brown	Colorado
Stanford	

At the close of the chapter reports, the President called upon the following gentlemen, who responded briefly on the topics assigned to them:

Professor W. C. Mills of Ohio State University, President of the Ohio Chapter—A Greeting to the Convention from the Local Chapter.

Dean William McPherson of Ohio State University—The Influences of Sigma Xi on Research.

Professor W. J. Humphreys of Washington, D. C.—What the Federal Government is Doing to Promote Research.

Professor W. S. Franklin of Lehigh—Teaching and Research.

Professor Henry B. Ward, University of Illinois—Future of Sigma Xi.

President Charles W. Eliot of Harvard University, who was present as guest of honor, was then called upon and spoke at length upon The Significance of Research and of the Scientific Spirit for the Progress of the Nation and of the Human Race. He also discussed the power and the duty of the University president in promoting research.

President Charles S. Howe in behalf of the Society, expressed the thanks of the Convention very gracefully, to the local chapter and to the Ohio Union in whose building the meeting was being held, for conditions which made the Convention so successful.

## REPORT OF THE SECRETARY

Every member in the Society of the Sigma Xi is vitally interested in its growth and despite the annual publication of statistics on elections to membership, few have any adequate idea of the rapid expansion which the society is experiencing. Chapters are widely scattered, each is working along steadily in its own field, devoting scant attention to progress in any other and sufficiently occupied with its own problems. It has been noted that in transmitting for publication lists of elections, chapter secretaries have many times expressed a fear that perhaps the list of new members this year was too large, but have justified the number on the basis of the great increase in the total enrollment of the college or in the number working in engineering, agriculture, or the graduate school.

A few figures set down together will show by contrast the wonderful spread of Sigma Xi influence within very recent years. No absolute record of membership and of elections in different years is available for the figures published annually are revised almost as often by subsequent secretaries. Apparently, chapters have not any precise record of their membership and certainly different secretaries vary widely in the classification of candidates elected since the changes often consist in shifting small groups from one column to another in the Statistical Summary. Yet the records printed in these tables are substantially correct and give a good picture of the composition of the Society of the Sigma Xi as it stands today.

The *Quarter Century Record and History* listed very nearly 7,500 names, including all elected up to December 31, 1911. The few accidental omissions in that list would, if added, carry the total clearly above that figure. The statistical record for 1912 (see *QUARTERLY*, 1: 55) shows the election to membership of 720 persons, of whom 352 were undergraduates, 274 resident graduates, and 94 faculty members. With the addition of these names the total membership stood at 8,200.

The table of statistics for 1913 (see *QUARTERLY*, 2: 55) records the election of 743 new members of whom 349 were undergraduates, 280 resident graduates, 110 faculty members and 3 alumni. The total membership of the Society stood then at about 8,950. The table of statistics for 1914 (see *QUARTERLY*, 3: 128) lists the elec-



tion of 799 new members of whom 282 were undergraduates, 305 resident graduates, 99 faculty members and 113 alumni. The grand total of members in the Society would then have been about 9,750.

The totals are as stated only approximate figures for many reasons which may be outlined more fully for the sake of clearness. Chapter secretaries change frequently and new officers do not always understand or follow the practices of their predecessors so that totals are being revised from year to year. Members move from one institution to another and are sometimes omitted and again recorded as additions in the returns of the chapter in the new location. Dates of elections vary greatly and the figures reported by a chapter secretary this year may not balance with those sent in last year because they omit an election period which was included the previous year or because an intermediate election was counted twice. Finally, the chapters have no similar method, and in a few cases no method at all, of making a permanent record of elections and cannot report the exact membership to date. Despite these and other irregularities the records are being constantly revised and corrected so that at some early future date a true list of the membership will be in existence. With a total membership estimated at 9,750 at the close of the last academic year it is safe to maintain that the grand chapter roll has already passed *ten thousand* and by the close of this college year will have gone full five hundred beyond that figure. A body of ten thousand scholars should be a powerful influence in the field of research and should make that influence felt through the length and breadth of our country.

It is important to examine more in detail these figures which present the growth of the last few years to see if they afford any evidence of the direction in which the Society is growing and the character of the increase it is making. At the outset one sees that the number of undergraduate elections appears to be distinctly decreasing. In 1912 only four chapters elected no undergraduates; viz., Chicago, Indiana, Syracuse, and Wisconsin. In 1914 Minnesota and Missouri had joined the list of those who reported no undergraduate elections, and other chapters had proceeded more cautiously with such elections since the total elections under this caption had fallen off from 352 to 282, a loss of 20%. University statistics show that during the same period there had been an average

increase in enrollment of more than 10% so that the relative decrease amounts to about 25%. The number of faculty members elected fluctuated about 10% but the last year showed only a 5% gain over the first year in the series used and in the light of material increase in the size of the teaching staff in institutions represented, such a change has no particular significance. The new faculty members added to the Society each year constitute only a little more than 1% of its total membership and if one eliminates the fraction introduced here by changes from one institution to another this figure becomes even less. However, as a nearly permanent part of the active membership this element is possessed of great influence and undoubtedly aids in determining the policy of the organization to a degree out of all relation to its percentile size. While only one-fourth of the average annual increment of the chapters, the new faculty membership forms probably at least nine-tenths of the annual increase in active membership and will continue to do so. The elections from resident graduates have grown steadily in this series of years from 274 to 305, an increase of about 10%. It would be possible to determine exactly what ratio this increase bears to the growth in enrollment of graduate students in the institutions concerned but I have not taken the trouble to collect the data necessary. From general knowledge of the increase in graduate enrollment especially in the Central West, I believe myself that elections to Sigma Xi have increased much less rapidly than the number of students who might claim attention. It seems probable that the apparent increase in this part of the field is in fact a relative decrease sufficiently distinct to be noteworthy. Sigma Xi chapters have in my opinion grown more conservative in the election of members.

The number of alumni members elected was much increased last year since two chapters, Northwestern and Ohio State, together chose 100 alumni to membership whereas the total elections under this heading in previous years have been only 3 or 4. There is much to be said in favor of the reexamination of alumni lists at stated periods in order that the Society may gain the support and influence of men who have made good in research. The Society would profit by the experience of the chapters which have done this and the publication of such lists in the *QUARTERLY* is strongly

advised not only for that reason but also in order to make the list a matter of permanent record and to give it wide dissemination.

In the last report attention was called to the fact that the reports of chapter activities which had been published, came from only part of the chapters in membership in the Society. This year reports have appeared from Cornell, Chicago, Illinois, Michigan, Missouri, Northwestern, and Syracuse, only seven out of the twenty-eight chapters enrolled or just one in four. In this calculation I have omitted two newly organized chapters, District of Columbia and Texas, which have furnished complete reports of their organization that were printed; however, these are only in the first year of their history. If this year's record be added to that given last year as recorded in the *QUARTERLY* (3: 22, March, 1915) it appears that three annual reports have been printed for Chicago, Cornell, Illinois, and Michigan; two for Missouri, Northwestern, and Purdue. The first report for Syracuse appeared this year and no report at all has ever been furnished by Brown, California, Case, Columbia, Washington University, or Wisconsin. Each of the chapters not named is represented by only a single printed report in the records of the last three years. To many it will appear as an unfortunate condition that so small a part of the records of Sigma Xi are in permanent form.

The reasons for asking the chapters to print reports have been so often urged at Sigma Xi conventions that it may be superfluous to mention them here, but I venture to note some of them again in brief form. It is just thirty years since the Society of Sigma Xi was founded. It has enjoyed a growth beyond all expectation, especially in the last third of that period. In any organization spread over the length and breadth of the continent, personal contact between chapters is difficult if not impossible; the only way in which any one chapter may know much of the character and development of other chapters is through the medium of a printed record. The personal relations that are wisely maintained between chapters in geographic proximity may readily develop into sectionalism if some more general and far-reaching influence does not counteract the narrowing tendency. Every chapter has an interest in all the achievements of every other chapter, and not merely in the more conspicuous public activities represented by academic festivals and

inspiring addresses that present the progress of science or the opening of new and fruitful lines of research. The whole Society is thus vitally interested in the additions made annually to each chapter, the lines of activity which new members represent, the work they are doing in these lines, and the research they have inaugurated or completed for publication. Tendencies of a different if not clearly opposed character have been manifested in various chapters. The published reports of the Chicago chapter are a splendid justification of the encouragement of investigation through the election to membership of those alone who are taking some definite part in research. The printed records of the Cornell chapter demonstrate that general elections can be conducted so as to select from a large body of students doing only undergraduate work, those who show the promise of research and should be encouraged to develop the power.

The question has been asked again and again by members in private and in chapter meetings what are other chapters doing? What are the exact methods they employ and what sort of results are they securing in elections and in other chapter activities? The chapters owe it to themselves as well as to the Society to put this information in such form that it may be at the command of every member. It will serve to develop mutual interest and coöperation, and to repress sectionalism and narrow individualism. To make its work widely known is both the privilege and the obligation of every chapter.

The seven chapters which did transmit reports for printing last year are more than averagely influential. They elected about 40% of the new faculty members and of the resident graduate students admitted to the Society of the Sigma Xi during the year, and only 17% of the undergraduates chosen during the same period. An examination of the records of publication and research work submitted by these chapters as the basis on which the elections were made will justify their action abundantly even in the opinion of the most conservative members of our Society.

## NEW ILLINOIS BY-LAWS

At the meeting of the Illinois Chapter, March 16, 1916, the following conditions of eligibility for election to membership were adopted:

1. *Professors and Instructors, Non-resident Members, and Graduates of more than five years standing:* It is considered essential that persons in any one of the above classes shall have published the results of scientific research conducted by them, as a prerequisite for election to the Sigma Xi Society; provided, however, that the publication of master's or doctor's theses shall not be considered as fulfilling this requirement.

All nominations must be accompanied by published papers, articles, or books, submitted as evidence of the scientific attainments of the nominee, and the nominators should certify to their belief in the scientific value and originality of the publications submitted.

2. *Resident Graduate Students:* Graduate students, to become eligible for election to the Sigma Xi Society should have published the results of scientific research conducted by them, or should have the results of such work completed in manuscript, or should have completed an acceptable thesis.

All nominations must be accompanied by publications, manuscript, or thesis, submitted as evidence of the scientific attainments of the nominee, and the nominators should certify to the scientific value and originality of the publications or manuscript submitted.

3. *Undergraduate Students:* In general, the difficulty of estimating the degree of promise of scientific ability in undergraduate students is so great that the number of elections to this grade of membership should always be small. Nominators are urged to submit the names of only such students as give beyond all doubt, great promise of scientific activity, or who have some actual accomplishment in research as evidence.

It will be of great help to the Board of Electors if nominations are made to accord fully with the above conditions.

C. R. RICHARDS

H. W. MUMFORD

H. A. HARDING

E. B. PAINE

G. A. MILLER

E. W. WASHBURN

G. A. GOODENOUGH

W. S. BAYLEY

*Board of Electors.*



## ANNOUNCEMENT

Every new member of Sigma Xi should become acquainted with its history. In order to make this possible, the Executive Committee has directed that your attention be called to the publications of the Society.

*Sigma Xi Quarter Century Record and History* bound in electric blue cloth. 550 pp. \$2.50.

SIGMA XI QUARTERLY, Volumes 1, 2, 3, four numbers each, unbound, 50 cents per each volume.

Any of the items listed will be forwarded prepaid on receipt of draft or money order in payment of the amount indicated. Those who wish to order a complete set of the *QUARTERLY* and *History* will receive in addition until the supply is exhausted without extra cost a copy of each of the Transactions of the early Conventions as follows:

Proceedings of the Seventh (Philadelphia) Convention. Pamphlet.  
15 pp.

Proceedings of the Eighth (New York) Convention. Pamphlet.  
7 pp.

Proceedings of the Ninth (Chicago) Convention. Pamphlet. 14 pp.

Proceedings of the Tenth (Baltimore) Convention. Pamphlet.  
6 pp.

Proceedings of the Eleventh (Boston) Convention. Pamphlet.  
16 pp.

Proceedings of the Twelfth (Minneapolis) Convention. Pamphlet.  
28 pp.

Proceedings of the Thirteenth (Washington) Convention. Pamphlet.  
27 pp.

Later conventions are reported in the *QUARTERLY*. Order early and get a complete set. Address all correspondence to the Secretary of Sigma Xi, Henry B. Ward, Urbana, Illinois.



# CHAPTER OFFICERS

## LIST FURNISHED BY THE CORRESPONDING SECRETARIES OF THE CHAPTERS

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Cornell.....	J. G. Needham...	F. K. Richmyer..	J. G. Pertsch, Jr....	James McMahon...	O. C. Johansen
Rensselaer.....	E. N. D. Schulte..	F. R. I. Sweeney...	C. H. Andros.....	E. F. Chillum...	E. F. Chillum
Union.....	Howard Odyke...	C. F. F. Garris...	Moland King.....	Warren C. Taylor	Norland King
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Nebraska.....	Jos. D. Hoffman...	R. A. Lyman.....	Flor. A. McCormick	A. L. Candy.....	N. A. Bengston
Ohio.....	William C. Mills..	A. W. Smith.....	A. E. Flowers.....	A. E. Flowers.....	T. E. French
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Columbia.....	G. B. Pegram.....	E. B. Frost.....	W. W. Stiffer.....	Wm. Campbell...	W. W. Stiffer
Chicago.....	C. J. Herrick....	J. K. Finch.....	Robt. Reizer.....	J. Steglitz.....	Robt. Reizer
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Illinois.....	C. R. Richards...	H. A. Harding...	M. L. Enger.....	H. F. Moore.....	C. D. Hodgman
Case.....	C. H. Fulton....	F. H. Vose.....	W. R. Veazey.....	W. R. Veazey...	W. E. Joseph
Indiana.....	F. M. Andrews...	Wm. Scott.....	M. E. Hufford...	M. E. Hufford...	W. M. Tucker
Missouri.....	M. F. Miller.....	E. R. Clark.....	D. H. Dolley.....	D. H. Dolley...	C. B. Hutchison
Colorado.....	O. C. Lester.....	C. E. Giffin.....	P. G. Worcester...	P. G. Worcester...	Ira M. DeLong
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Including Chapter Reports received up to March 1, 1916.

## OFFICIAL ANNOUNCEMENTS

### QUARTER CENTURY RECORD AND HISTORY

According to the instructions given by the General Convention, a copy will be sent prepaid on receipt of \$2.50.

### SIGMA XI QUARTERLY

Title Page and Table of Contents for Volume I, II, or III will be sent members or subscribers on request. A few extra copies of these volumes are to be had at the regular subscription price. Odd numbers will be sent members to fill gaps as long as the supply holds out.

### PRINTED BLANKS

The General Convention has instructed the Secretary to keep for chapters a supply of printed blanks as enumerated below. According to instructions these are to be forwarded to chapters under the following stipulations:

Membership Certificates, stamped with the great seal of the Society. In packages of fifty prepaid, on advance payment of \$2.50 for each package.

Index Cards, on the condition that a duplicate set be sent for the general index of the Society maintained in the secretary's office. Gratis on demand.

Report Blanks, for submitting annual reports giving chapter officers, elections, and other statistical data. Gratis on demand.

Mailing Blanks, on which secretaries are requested to furnish once a year a correct list of mailing addresses of active members to be transmitted directly to the printer. Gratis on demand.